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REPLY OF CENTER FOR SUSTAINABLE ENERGY TO RESPONSES TO ORDER INSTITUTING RULEMAKING REGARDING POLICIES, PROCEDURES AND RULES FOR DEVELOPMENT OF DISTRIBUTION RESOURCES PLANS

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Stephanie Wang
Sr. Policy & Regulatory Attorney
Center for Sustainable Energy
426 17th Street, Suite 700
Oakland, CA 94612
stephanie.wang@energycenter.org

Sachu Constantine
Policy Director
Center for Sustainable Energy
426 17th Street, Suite 700
Oakland, CA 94612
sachu.constantine@energycenter.org

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Pursuant to the Order Instituting Rulemaking Regarding Policies, Procedures and Rules for Development of Distribution Resources Plans Pursuant to Public Utilities Code Section 769 issued August 14, 2014 (OIR), the Center for Sustainable Energy offers the following replies to the responses to the questions posed by the OIR. Generally, our replies below focus on ensuring that the Distribution Resources Plans (Plans) will empower customers to help California meet its clean energy goals. These replies are organized as follows:

- Optimizing the Plans to Meet California's Goals
- Customer-Driven Planning
- Grid-Driven Planning

The Center for Sustainable Energy (CSE), formerly the California Center for Sustainable Energy (CCSE), works to accelerate the transition to a sustainable world powered by clean energy. Our clean energy future depends on a strong, low-carbon economy that provides abundant jobs and business opportunities, a high quality of life, and a clean, healthy environment. To bring about such a future, each of us must make wise choices now. CSE empowers customers to participate in the achievement of their clean energy goals by providing them with information, incentives and opportunities to help make these choices easier. We work with policymakers, public agencies, local governments, utilities, business and civic leaders and individuals to transform the energy marketplace and beyond.

I. OPTIMIZING THE PLANS TO MEET CALIFORNIA'S GOALS

The utilities' responses to the OIR presented a vision for the Plans focused

entirely on the needs of the grid rather than on the preferences of customers. The utilities contended that the fundamental purpose of these Plans is to minimize the costs and maximize the benefits of distributed energy resources (DERs) solely in terms of grid operations, capital investments, and other system impacts. Pacific Gas & Electric (PG&E) proposed that the "overarching principle" of the Plans "should be to facilitate integration of DER at optimal locations in a manner that minimizes overall system costs and maximizes ratepayer benefit from investments in DER, while at the same time maintaining system safety and reliability." Although PG&E stated that utility distribution planning and operations should be responsive to customer preferences for owning or operating DER,[1] its proposed overarching principle did not include any mention of how the Plans should proactively account for and facilitate the integration of distributed resources that are located at sites chosen by customers.

The utilities proposed criteria for defining "optimal locations" for DER accordingly. Southern California Edison (SCE) proposed, "[o]ptimal location criteria should focus on the primary underlying cost-benefit analysis: (1) the costs saved by the deferral of a traditional capital investment in the distribution system, compared to (2) the costs associated with the DER that allows such deferral."[2] PG&E asserted, "[o]ptimal locations can be interpreted as the areas where new DERs can be interconnected with minimal need for additional investment by the distribution system owner to ensure the system can continue to be operated safely and reliably. Optimal locations can also be interpreted as the areas where new DERs can provide capacity

[1] "IOU distribution planning and operations should be responsive to customer preferences and choices of preferred customer-owned or operated DERs. To the extent that IOU customers prefer and choose customer-owned or operated DERs to serve their retail electricity needs, IOUs should provide convenient, expedited and cost-effective methods and criteria for interconnecting those DERs to the grid in order to satisfy the preferences of their customers." PG&E's response to OIR questions at 5.

[2] SCE's responses to OIR questions at 4.

and/or reliability benefits to the distribution system."

On the other hand, stakeholders proposed additional principles for developing the Plans. The Vote Solar Initiative asserted that the Commission should embrace three goals for determining the optimal locations of DERs: "Customer Responsiveness (i.e., where customers want DERs), Low-Cost Integration (i.e., where DERs can be integrated at a low cost) and Benefits Maximization (i.e., where DERs can maximize grid benefits)." In addition to optimizing based on grid costs and benefits, the Clean Coalition asserted that the Plans must also be designed in alignment with California's clean energy goals and mandates, including Assembly Bill (AB) 327 (Stats. 2013, ch. 611) requirements for sustainable growth of distributed generation, Zero Net Energy buildings, electric vehicle targets, energy storage targets, demand response goals, the Loading Order, and Long Term Procurement Plan requirements.[3]

More Than Smart, the whitepaper attached to the OIR, captures the need to enable customer choice as California transitions to a more decentralized electric system:

> California environmental and energy policies combined with customer choices enabled by innovation are forcing fundamental changes to California's power system. It is quickly evolving from the historically centralized structure toward a substantially more decentralized future. This transition creates an opportunity to significantly reduce greenhouse gases by harnessing the value of energy across the grid from customers at the edge through the bulk power system. Essential to achieving this outcome is enabling customer choice via an electric distribution system that becomes more transparent in terms of information and open in terms

[3] Clean Coalition's responses to OIR questions at 3.

of access.[4]

In summary, the parties have presented two main approaches for setting optimal locations criteria and guiding the development of the Plans: Customer-Driven (i.e., where customers want DERs) and Grid-Driven (i.e., where DERs have the highest net value to the grid). A purely top-down, Grid-Driven approach would only permit DERs to be sited at locations where they have the highest net value to the grid. A purely bottom-up, Customer-Driven approach would enable all customers to choose which DERs to adopt without providing signals relating to the value and costs of their actions to grid operations.

The legislative intent of AB 327 supports a combination of the two approaches. While the Section 769 requirements for the Plans specifically reference grid benefits and costs, this section must be read in context of the rest of AB 327, which also establishes a net energy metering successor program (NEM 2.0) that "ensures that customer-sited renewable distributed generation continues to grow sustainably" and further provides, "[t]here shall be no limitation on the amount of generating capacity or number of new eligible customer-generators entitled to receive service pursuant to the standard contract or tariff after July 1, 2017."[5] The NEM 2.0 requirements underscore the legislature's intent to provide broad access to DER programs by requiring "specific alternatives designed for growth [of distributed renewable generation] among residential customers in disadvantaged communities."

To meet California's clean energy goals, CSE recommends a hybrid Customer-Driven approach that empowers customers with broad access to DER programs, as well as rate and incentive signals that encourage customers to adopt a variety of DER

[4] Paul De Martini et al., *More Than Smart: A Framework to Make the Distribution Grid More Open, Efficient and Resilient*, at 5.
[5] California Public Utilities Code Section 2827.1(b)(1), added by AB 327.

solutions that benefit the grid. We also recommend a complementary Grid-Driven approach that identifies where DERs can avoid costly investments in central generation and transmission but remains flexible enough to support and integrate DERs at locations selected by customers. Accordingly, the Plans should both identify and guide DERs to optimal locations from a Grid-Driven perspective and support DERs in optimal locations from a Customer-Driven perspective.

II. CUSTOMER-DRIVEN PLANNING

CSE supports Customer-Driven Planning that optimizes programs, policies and grid investments to support customer-sited renewable generation, integrated with other DERs – including demand response, managed electric vehicle charging, and energy storage.[6] This approach to meeting California's clean energy goals will facilitate customer choices about where to adopt DERs and build new Zero Net Energy homes and businesses.

CSE agrees with the Vote Solar Initiative and the *More Than Smart* whitepaper that we need studies to forecast the geographic diffusion of customer adoption of DERs.[7] We recommend that the Commission immediately authorize independent local potential studies to determine projected customer participation at the feeder level, or at least the substation level, within a short-term (e.g. three years) and a longer-term (e.g. ten years) planning horizon. These local potential studies should take into account relevant programs and goals, such as NEM 2.0 and Zero Net Energy.

The independent studies should incorporate best practices developed by the

[6] DERs can integrate variable renewables by smoothing out net load profiles, providing voltage control, and providing other grid services. For an overview of how DERs can integrate variable generation, see Electric Power Research Institute, *The Integrated Grid: Realizing the Full Value of Central and Distributed Energy Resources* (2014), at 25-27.

[7] *More Than Smart* at 10. Vote Solar comments at 9.

Solar Energy Evolution and Diffusion Studies (SEEDS) project,[8] supported by the Department of Energy's SunShot Initiative. CSE is part of the SEEDS project team, which has developed a predictive model of individual and aggregate solar technology adoption that leverages individual-level data, combined with lab and field experiments. In addition to CSE, the project team includes Sandia National Laboratories (project lead), the National Renewable Energy Laboratory, the Wharton Business School and Vanderbilt University. Based on CSE's direct experience, we expect that these planning studies can be completed within two or three months with sufficient funding and resourcing.

Next, the utilities should develop plans to integrate forecasted customer-sited renewable generation with energy efficiency, demand response, managed electric vehicle charging, and energy storage, to the extent feasible based on the local potential studies. The Plans should propose distribution grid investments to support projected customer-sited generation. When determining whether these proposed investments meet the requirements of Section 769(d) that "ratepayers would realize net benefits and the associated costs are just and reasonable," the Commission should consider compliance with customer-driven clean energy goals as a critical ratepayer benefit. While ratepayers should not be expected to pay the costs to interconnect every potential NEM 2.0 project, ratepayers should invest in sufficient grid upgrades to ensure that "customer-sited renewable distributed generation continues to grow sustainably", as required by AB 327.[9]

The planning process proposed above is similar to the planning process described by the Clean Coalition for its Hunters Point Community Microgrid Project, except that CSE's recommended planning process begins with projecting where

[8] More information about SEEDS is available at http://energycenter.org/programs/solar-energy-evolution-and-diffusion-studies.

[9] California Public Utilities Code Section 2827.1(b)(1), added by AB 327.

customers will choose to participate in DER programs.[10] In practice, these approaches may be combined, so that the Clean Coalition's approach may guide planning for large commercial- and industrial-sited generation, while the CSE approach is used to plan for residential- and small business-sited generation. A more Grid-Driven approach to planning for DER adoption may make sense for large commercial and industrial customers due to the different nature of these utility-customer relationships and resulting differences in marketing and procurement processes.

The Plans should also include programs and incentives to encourage customers to adopt complementary suites of DER solutions.[11] Currently, customers are given no additional incentive to provide complementary DERs. This is a systemic issue – DER programs and incentives are designed and evaluated individually. The cost-effectiveness of each type of DER is calculated separately, despite the fact that these resources can have far higher value when they are combined into integrated demand side resources. For example, distributed solar generation combined with managed electric vehicle charging to reduce net load profile ramps and peaks will have far more value to the grid than each resource would have on its own.

Integrating DERs is also important from a customer engagement and transaction cost perspective. Research has shown that customers who adopt one DER solution are

[10] See the Clean Coalition's responses to the OIR at 7, which recommend that distribution planning begin with an assessment of the "Baseline Capacity" of a substation, meaning the existing capacity of the substation that requires no upgrades if specified generation amounts are placed in specified locations selected by utility engineers.

[11] Section 769 provides that the proposed Plans shall: "(2) Propose or identify standard tariffs, contracts, or other mechanisms for the deployment of cost-effective distributed resources that satisfy distribution planning objectives. (3) Propose cost-effective methods of effectively coordinating existing commission-approved programs, incentives, and tariffs to maximize the locational benefits and minimize the incremental costs of distributed resources."

more likely to adopt additional DER solutions.[12] In D. 07-10-032, the Commission found, "[w]e will achieve maximum savings by providing integrated customer demand-side programs. Integrating our numerous customer demand-side programs will avoid duplication of efforts, reduce transaction costs and diminish customer confusion. We must understand how the programs intersect and take advantage of the interactions."[13]

CSE is leading the integration of marketing, education and outreach for demand side management to enhance customer engagement and leverage opportunities for synergy. In D.12-05-015, the Commission took a big step towards integrating demand side management efforts by directing the transition of Energy Upgrade California® from the name of the whole-house retrofit program to an "umbrella brand" that covers the broad range of California's customer-facing clean energy programs, and tasked the program with informing residential consumers and small businesses about taking demand-side management actions.[14] D.12-05-015 also named CSE as the administrator and implementer of statewide marketing, education and outreach for residential and small business customers under the Energy Upgrade California® brand for a myriad of demand side management and clean energy topics, including energy efficiency, demand response, distributed generation, and other energy management actions.[15]

III. GRID-DRIVEN PLANNING

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[12] Ria Langheim et al., *Energy Efficiency Motivations and Actions of California Solar Homeowners*, Center for Sustainable Energy (August 2014).
[13] *Interim Opinion on Issues Relating to Future Savings Goals and Program Planning for 2009-2011 Energy Efficiency* at 6.
[14] *Decision Providing Guidance on 2013-2014 Energy Efficiency Portfolios and 2012 Marketing, Education, and Outreach* at 380.
[15] D.13-12-038, *Decision on Phase 2 Issues: Statewide Marketing, Education, and Outreach Plans for 2014-2015*, reiterated CSE's role as administrator and implementer of the statewide marketing, education and outreach program and provided the governance structure for the program.

CSE supports Grid-Driven Planning that optimizes programs, policies and procedures to encourage customers to provide DERs at the locations on the grid where they can provide the highest net value. We agree with the many parties that support additional incentives, price signals, and/or interconnection preferences for customers to provide DERs at locations with the highest net grid value without excluding participation of customers in non-optimal locations.[16] CSE envisions targeted incentives for certain locations as an additional layer on top of standard incentives and efforts to provide all customers with awareness, understanding, and access to DER programs. To provide equitable treatment to ratepayers, we must offer opportunities to share in the benefits of DER programs and participate in California's achievement of its clean energy goals.

CSE also agrees with the many organizations that have emphasized the importance of increasing transparency of distribution grid planning, and providing clear signals to encourage customers to adopt DERs based on grid value. In addition to publicly providing information about the locations with the highest net grid value, the Plans should include proposed methodologies for developing value-based incentives and pricing signals to encouraging customer participation at these locations.[17] The Plans should also include proposed tools for determining net grid value at a sufficient level of granularity to allow utilities to actually avoid costs, such as capital investments and congestion costs.

IV. CONCLUSION

CSE supports a hybrid approach combining Grid-Driven and Customer-Driven

[16] These parties include the Environmental Defense Fund, the California Energy Storage Alliance, the Clean Coalition, and the Vote Solar Initiative, among others.
[17] *See* the responses of the Environmental Defense Fund, the California Energy Storage Alliance, and the Clean Coalition, among others.

planning to enable broad customer access to DERs and provide signals relating to the value and costs of their actions to grid operations. This approach will leverage individual investments in clean energy to create the robust, resilient, and accessible distribution grid we need to meet the energy and environmental challenges we face today, as well as in the future. For the foregoing reasons, CSE respectfully requests that the Commission adopt the above recommendations.

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Stephanie Wang
Sr. Policy & Regulatory Attorney
Center for Sustainable Energy
426 17th Street, Suite 700
Oakland, CA 94612
stephanie.wang@energycenter.org

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